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## ABSTRACT

This unit of instruction is concerned with briefly interpreting some major life science aspects of the South Florida environment and is dependent on outdoor laboratories, excursions, and ecology-oriented instructional materials. It is suggested that many of the instructional materials may need to be originated. To make collections on field trips is illegal without a permit; thus, information is provided to facilitate this request. No enrollment guidelines are suggested. State-adopted texts relevant to the course are listed. The performance objectives and course outline are presented in the booklet. Relevant publications are suggested and South Florida Environmental Science Media Units available from the Dade County Audiovisual Center are found in the unit. Suggested activities, guest speakers, and field trips are provided. Films available as well as slides, transparencies, records, and models are listed. A list of necessary materials to be purchased is included in the booklet. A master sheet is provided relating each suggested activity to the specific performance objectives. (FB)




U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
NATIONAL INSTITUTE OF  
EDUCATION

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**AUTHORIZED COURSE OF INSTRUCTION FOR THE**

# QUINMESTER PROGRAM



**DADE COUNTY PUBLIC SCHOOLS**

**LIFE SCIENCE THROUGH  
FIELD EXPERIENCES**

5311.14  
5312.14  
5313.14

**(Experimental)**

**DIVISION OF INSTRUCTION • 1971**

LIFE SCIENCE THROUGH  
FIELD EXPERIENCES

5311.14  
5312.14  
5313.14

SCIENCE

(Experimental)

Written by Jim O'Connor  
for the  
DIVISION OF INSTRUCTION  
Dade County Public Schools  
Miami, Florida  
1972

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**Miami, Florida 33132**

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**Miami, Florida 33135**



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## LIFE SCIENCE THROUGH FIELD EXPERIENCES

### COURSE DESCRIPTION

By design, the course is concerned with briefly interpreting some major life science aspects of the south Florida environment, and is dependent upon outdoor laboratories and excursions and ecology-oriented instructional materials, many of which will, out of necessity, need to be originated.

THE COLLECTING OF ANY KIND OF MARINE ANIMALS  
BY NET, SEINE OR TRAP IS ILLEGAL WITHOUT A  
PERMIT. IN ORDER TO MAKE COLLECTIONS ON FIELD  
TRIPS (OR TO CATCH SPECIMENS FOR MARINE AQUARIUMS)  
TEACHERS SHOULD WRITE A LETTER REQUESTING A  
PERMIT TO:

FLORIDA STATE BOARD OF CONSERVATION  
LARSON BUILDING  
TALLAHASSEE, FLORIDA  
(ATTENTION PERMIT CLERK)

### ENROLLMENT GUIDELINES

None

### STATE ADOPTED TEXTS

Brandwein, Paul F., Burnett, R. Will and Strollberg, Robert. Life: Its Forms and Changes. New York: Harcourt, Brace and World, Inc., 1968.

Mason, John M. and Peters, Ruth T. Life Science. Princeton: D. Van Nostrand Company, Inc., 1965.

Thurber, Walter A., and Kilburn, Robert E. Exploring Life Science. Boston: Allyn and Bacon, Inc., 1966.

## PERFORMANCE OBJECTIVES

1. Given photographs or specimens of local marine organisms and a general explanation of life zones the student will assign each organism to its respective life zone.
2. Given photographs or specimens of fresh water organisms and an example of a food chain the student will arrange the organisms in a food chain.
3. Given photographs of habitats common to Everglades National Park and information on food webs the student will suggest a food web for one of the habitats.
4. Given photographs or specimens of insects and/or spiders and information on their feeding habits the student will deduce the habitat of each specimen.
5. Given photographs or specimens of diseased plants and information on related phytopathology the student will identify by common name the causative agent of each disease.
6. Given photographs and names of local lawn weeds the student will contribute labeled examples to a living classroom collection.
7. Given photographs and names of poisonous and/or allergy producing plants that are commonly used as ornamentals the student will prepare a chart that shows their distribution in a section of the surrounding area.
8. Given photographs or specimens of local plants the student will identify by common name those having economic value.
9. Given photographs of organisms that are common to the Anhinga Trail and information on the structure of a community the student will construct a visual that illustrates the strata.
10. Given photographs and names of organisms that inhabit the lowland and highland regions of Everglades National Park the student will predict a succession that could occur after a controlled burn.
11. Given photographs or specimens and names of exotic plants that encroach upon hardwood hammocks the student will devise methods of controlling the intruders.

## COURSE OUTLINE

### I. Marine Environment

#### A. Life Zones

1. Beach
2. Shore line
3. Shallow water

#### B. Organisms

##### 1. Flora

- a. Algae
- b. Salt tolerant
- c. Exotic

##### 2. Fauna

- a. Invertebrates
- b. Vertebrates
- c. Habitats

### II. Fresh Water Environment

#### A. Water

1. Sources
2. Management

#### B. Life

##### 1. Food chain

- a. Producers
- b. Consumers
- c. Reducers

##### 2. Food web



### III. Everglades Environment

#### A. Habitats

1. Pineland
  2. Sawgrass
  3. Tree islands
  4. Transition zone
  5. Mangrove
  6. Coastal prairie
  7. Estuarine
  8. Taylor slough
- a. Organisms
  - b. Stratification

#### B. Topography

1. Highland
2. Lowland

#### C. Succession

1. Natural
2. Artificial

### IV. Terrestrial Environment

#### A. Flora

1. Beneficial
  - a. Fruits
  - b. Vegetables
  - c. Ornamentals
2. Detrimental
  - a. To agriculture
  - b. To homes
  - c. To people

## B. Fauna

### 1. Invertebrates

- a. Worms
- b. Spiders
- c. Insects

### 2. Vertebrates

- a. Reptiles
- b. Birds
- c. Mammals

## C. Ecological Paradox

### 1. Exotics

- a. Casuarina
- b. Walking catfish

### 2. Controls

- a. Biological
- b. Chemical
- c. Mechanical
- d. Governmental

## RELEVANT PUBLICATIONS

1. Biological Sciences Curriculum Study. Biological Science, Molecules to Man. Boston: Houghton Mifflin Company, 1968.
2. Brandwein, Paul F., Burnett, R. Will, and Strollberg, Robert. Life: Its Forms and Changes. New York: Harcourt, Brace and World, Inc., 1968.
- \*3. Bush, Charles. Flowers, Shrubs and Trees for Florida Homes. Tallahassee: Bulletin No. 195, Florida Department of Agriculture and Consumer Services, 1969.
4. Carson, Rachel. The Edge of the Sea. New York: The New American Library of World Literature, Inc., 1962.
- \*5. Dade County Park and Recreation Department. Redland Fruit and Spice Park. Miami: Park and Recreation Department, Metropolitan Dade County.
- \*6. Dickey, R. D., West, Erdman and Mowry, Harold. Native and Exotic Palms of Florida. Bulletin 152-A, Institute of Food and Agricultural Service. Gainesville: University of Florida.
7. Douglas, Marjorie Stoneman. The Everglades: River of Grass. New York: Holt, Rinehart and Winston, 1947.
- \*8. Fairchild Tropical Garden. Catalog of Plants of the Fairchild Tropical Garden. Miami, Florida: 1966.
9. Florida Audubon Society. Florida Audubon Society Catalogue. P. O. Drawer 7. Maitland, Florida.
- \*10. Florida Department of Education. Source Book of Marine Sciences, The. Tallahassee: Division of Elementary and Secondary Education, Bureau of Curriculum and Instruction, Department of Education, 1970.
- \*11. Florida Game and Fresh Water Fish Commission. Florida Animal Tracks. Tallahassee: Game and Fresh Water Fish Commission, Florida.
- \*12. Florida State Department of Agriculture. Dictionary of Florida Plants. Tallahassee: Bulletin No. 161, Department of Agriculture, 1965.

\*Free or inexpensive publications

RELEVANT PUBLICATIONS (Continued)

- \*13. Florida State Department of Agriculture. Florida Crops. Tallahassee: Bulletin No. 1, Florida State Department of Agriculture, 1964.
- 14. Mason, John M. and Peters, Ruth T. Life Science. Princeton: D. Van Nostrand Company, Inc., 1965.
- 15. Maxwell, Lewis S. Florida Insects: Their Habits and Control. 6230 Travis Blvd., Tampa: Maxwell Co., 1962.
- 16. Maxwell, Lewis S. Florida's Poisonous Plants, Snakes, Insects. 6230 Travis Blvd., Tampa: Maxwell Co., 1962.
- 17. National Audubon Society. Audubon Aids in Natural Science. (Catalogue) 1130 Fifth Avenue, New York, New York, 10028: National Audubon Society.
- 18. Robertson, William B. Everglades -- the Park Story. Coral Gables: University of Miami Press, 1959.
- 19. Rohm and Haas Company. Compendium of Plant Diseases. Philadelphia: Rohm and Haas Co.
- \*20. Smart, Alice. Fruit Trees for Florida Homes. Tallahassee: Bulletin No. 183, Department of Agriculture, 1964.
- 21. Stephens, William M. Southern Seashores. New York: Holiday House, 1968.
- 22. Thurber, Walter A. and Kilburn, Robert E. Exploring Life Science. Boston: Allyn and Bacon, Inc., 1966.
- \*23. U.S. Government Printing Office. Better Lawns. Washington, D.C.: Home and Garden Bulletin No. 51, Superintendent of Documents, U. S. Government Printing Office, 1966.
- \*24. U.S. Government Printing Office. Insects and Diseases of Vegetables in the Home Garden. Washington, D.C.: Home and Garden Bulletin No. 46, Superintendent of Documents, U. S. Government Printing Office.
- \*25. U.S. Government Printing Office. Lawn Weed Control with Herbicides. Washington, D.C.: Home and Garden Bulletin No. 123, Superintendent of Documents, U. S. Government Printing Office, 1968.

\*Free or inexpensive publications

RELEVANT PUBLICATIONS (Continued)

- \*26. University of Florida. Commercial Vegetables Insect and Disease Control Guide. Gainesville: Circular 1937, Florida Agricultural Extension Service, University of Florida.
- \*27. University of Florida. Institute of Food and Agricultural Sciences Publications, The Current List. Gainesville: Agricultural Extension Service, University of Florida.
- \*28. University of Florida. Poisonous Plants Around the Home. Gainesville: Circular S-100, Florida Agricultural Extension Service, University of Florida.
- \*29. University of Florida. Weeds of the Southern United States. Gainesville: Florida Agricultural Extension Service, Institute of Food and Agricultural Services, University of Florida.
- \*30. West, Erdman and Emmel, M. W. Plants That Poison Farm Animals. Gainesville: Bulletin 510A, University of Florida Agricultural Experiment Station.
- 31. Zim, Hebert S. A Guide to Everglades National Park. New York: Golden Press, 1960.

\*Free or inexpensive publications



SOUTH FLORIDA ENVIRONMENTAL SCIENCE MEDIA UNITS  
Available from Dade County Audiovisual Center

- |  | AV#     |
|--|---------|
| 1. Media Unit I 8B2-MU-1<br>SOUTH FLORIDA MARINE BIOLOGY<br>Subtopic A (filmstrip and audio tape)<br><u>One Hour at Bear Cut</u>   | 3-60034 |
| 2. Media Unit II 8B2-MU-2<br>SOUTH FLORIDA FRESH WATER BIOLOGY<br>Subtopic D (filmstrip and audio tape)<br><u>Safety in Size</u>   | 3-60035 |
| 3. Media Unit III 8B2-MU-3<br>SOUTH FLORIDA FAUNA<br>Subtopic B (filmstrip and audio tape)<br><u>Flamingo Road</u>   | 3-60036 |
| 4. Media Unit IV 8B2-MU-4<br>SOUTH FLORIDA INVERTEBRATES<br>Subtopic C (filmstrip and audio tape)<br><u>The Patient Predators</u><br>Subtopic E (filmstrip and audio tape)<br><u>Insects</u>   | 3-60037 |
| 5. Media Unit V 8B2-MU-5<br>SOUTH FLORIDA FLORA DETRIMENTAL TO AGRICULTURE<br>Subtopic C (filmstrip and audio tape)<br><u>Vegetable Diseases</u>   | 3-60038 |
| 6. Media Unit VI 8B2-MU-6<br>SOUTH FLORIDA FLORA DETRIMENTAL TO THE HOME<br>Subtopic B (filmstrip and audio tape)<br><u>Lawn Weeds</u>   | 3-60039 |
| 7. Media Unit VII 8B2-MU-7<br>SOUTH FLORIDA FLORA DETRIMENTAL TO PEOPLE<br>Subtopic C (filmstrip and audio tape)<br><u>Local Poisonous Plants</u><br>Subtopic D (filmstrip and audio tape)<br><u>Allergy-Producing Plants</u>        | 3-60040 |
| 8. Media Unit VIII 8B2-MU-8<br>SOUTH FLORIDA BENEFICIAL FLORA<br>Subtopic C (filmstrip and audio tape)<br><u>Fruit and Crop Plants</u>   | 3-60041 |
| 9. Media Unit IX 8B2-MU-9<br>SOUTH FLORIDA AREAS OF BIOLOGICAL INTEREST<br>Subtopic A (filmstrip and audio tape)<br><u>The Anhinga Trail (Part I)</u><br>Subtopic B (filmstrip and audio tape)<br><u>The Anhinga Trail (Part II)</u> | 3-60042 |

SOUTH FLORIDA ENVIRONMENTAL SCIENCE MEDIA UNITS (Cont.)

10. Media Unit X 8B2-MU-10  
SOUTH FLORIDA HAMMOCKS  
Subtopic D (filmstrip and audio tape)  
Burning for Balance (Part I)  
Subtopic E (filmstrip and audio tape)  
Burning for Balance (Part II)

AV#  
3-60043

11. Media Unit XI 8B2-MU-11  
SOUTH FLORIDA BIOLOGY  
Subtopic B (filmstrip and audio tape)  
The Deadly Intruders

3-60044

## SUGGESTED ACTIVITIES

1. As a class prepare a list of safety rules to be followed on a field trip to Bear Cut.
2. Prepare a large color drawing that illustrates the organisms observed at Bear Cut. Include the respective life zones.
3. Design a card game based on the organisms in a fresh water food chain.
4. Before visiting Everglades National Park, obtain a copy of the tour map published by the park that identifies points of interest. Prepare descriptions of the scenes to be viewed along the major park road.
5. Write a science fiction story entitled, "Insects Everywhere."
6. Have a debate on the advantages and disadvantages of fungicides.
7. Contribute a labeled weed (common name, scientific binomial and plant family) to a living classroom collection.
8. Write a narrative entitled, "Ragweed" for a local five minute radio program.
9. Contribute labeled examples to a classroom display of local plants of economic value.
10. Write a newspaper story entitled: "The Anhinga Trail at Night."
11. Prepare a large color poster with the theme: "Fires are Nature's Business."
12. Prepare a list of exotic plants and/or animals purposely introduced in Florida.

FILMS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

	AV#
1. <u>Allergies</u> 10', BW	1-03113
2. <u>Animal Habitats</u> 10', C	1-02370
3. <u>Animal Life Cycle, An - Development of Sea Urchin</u> 28', C	1-30539
4. <u>Animals That Live in the Surf</u> 11', C	1-02699
5. <u>Anyone for Diving?</u> 30', C	1-30859
6. <u>Aquatic Insects</u> 11', BW	1-05787
7. <u>Arachnids</u> 10', BW	1-02740
8. <u>Arthropods: Insects and Their Relatives</u> 11', C	1-02736
9. <u>Balance in Nature</u> 17', C	1-11141
10. <u>Beach and Sea Animals</u> 11', BW	1-02664
11. <u>Biologists in a Tropical Laboratory</u> 12', BW	1-02189
12. <u>Bird Community, The</u> 12', C	1-02904
13. <u>Birds That Eat Fish</u> 6', C	1-02910
14. <u>Black Widow Spider</u> 12', C	1-02742
15. <u>Butterfly -- Life Cycle of an Insect</u> 6', C	1-02805
16. <u>Camouflage in Nature Through Form and Color Matching</u> 11', C	1-02655



FILMS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER (Continued)

	AV#
17. <u>Everglades, The: Conserving a Balanced Community</u> 11', 0	1-13868
18. <u>Food Getting Among Animals</u> 13', 0	1-11140
19. <u>Fruit</u> 10', 0	1-03732
20. <u>Fruits of Plants, The</u> 12', 0	1-11106
21. <u>Grass</u> 10', 0	1-03725
22. <u>Grasshopper, The -- A Typical Insect</u> 6', 0	1-02750
23. <u>Insect Collecting</u> 14', 0	1-11155
24. <u>Insect Enemies and Their Control</u> 11', 0	1-02765
25. <u>Insect Foods</u> 14', 0	1-11153
26. <u>Insects</u> 11', 0	1-92760
27. <u>Interrelationships for Survival</u> 28', 0	1-30558
28. <u>Microorganisms That Cause Disease</u> 11', 0	1-03413
29. <u>Natural Enemies of Insect Pests</u> 27', 0	1-30703
30. <u>Nature's Birds of Prey</u> 30', 0	1-30710
31. <u>Partnerships Among Plants and Animals</u> 11', 0	1-02657
32. <u>Praying Mantis</u> 9', 0	1-02781
33. <u>Prowlers of the Everglades</u> 26', 0	1-30952



FILMS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER (Continued)

34.	<u>Reptiles are Interesting</u> 10', C	AV# 1-02863
35.	<u>Seashore Life</u> 10', C	1-02687
36.	<u>Snakes of Florida</u> 6', C	1-02877
37.	<u>Spider Engineers</u> 12', BW	1-11151
38.	<u>Story of Citrus Fruits, The</u> 11', C	1-03735
39.	<u>Strand Breaks, A: The Web of Life (Part II)</u> 17', C	1-10202
40.	<u>Strand Grows, A: The Web of Life (Part I)</u> 15', C	1-11063
41.	<u>Strange Partners: Symbiosis in the Sea</u> 12', C	1-13718
42.	<u>Succession: From Sand Dune to Forest</u> 16', C	1-11108
43.	<u>Termites</u> 23', BW	1-11165
44.	<u>Typical Garden Spider, A</u> 8', BW	1-02733
45.	<u>What is Ecology</u> 11', C	1-11064
46.	<u>Wildlife Refuge</u> 14', C	1-11206

TRANSPARENCIES AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

- |                                       | AV#     |
|---------------------------------------|---------|
| 1. <u>Classification: Insects</u>     | 2-00175 |
| 2. <u>Classification: Vertebrates</u> | 2-00176 |
| 3. <u>Fungus Plants, The</u>          | 2-00025 |

RECORDS AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

- |                               | AV#     |
|-------------------------------|---------|
| 1. <u>Voices of the Night</u> | 4-40625 |

SLIDES AVAILABLE FROM DADE COUNTY AUDIOVISUAL CENTER

2 x 2

- |  | AV#     |
|--|---------|
| 1. <u>Alligators</u>                             | 5-20008 |
| 2. <u>Everglades National Park</u>               | 5-20095 |
| 3. <u>Florida Birds and Wildflowers</u>          | 5-70017 |
| 4. <u>Plants and Trees</u>                       | 5-20046 |
| 5. <u>Subtropical Flowering Plants (Part I)</u>  | 5-20074 |
| 6. <u>Subtropical Flowering Plants (Part II)</u> | 5-20067 |
| 7. <u>Subtropical Fruits We Eat (Part I)</u>     | 5-20050 |
| 8. <u>Subtropical Fruits We Eat (Part II)</u>    | 5-20009 |

Projecto-chart

- |                             |         |
|-----------------------------|---------|
| 9. <u>Honeybee, The</u>     | 5-30009 |
| 10. <u>Sponge, The</u>      | 5-30024 |
| 11. <u>Starfish Anatomy</u> | 5-30025 |

Microscope

- |  |         |
|--|---------|
| 12. <u>Flowering Plants</u>              | 5-00007 |
| 13. <u>Insects, Invertebrate Animals</u> | 5-00004 |
| 14. <u>Lower Plants and Animals</u>      | 5-00006 |



## MODELS

	AV#
1. <u>Animals of the Sea</u> Set 1	6-00123
2. <u>Animals of the Sea</u> Set 2	6-00161
3. <u>Florida Bay Model</u>	6-00152
4. <u>Florida Shells</u> Set 4	6-00001
5. <u>Honey Bee, The</u>	6-00109
6. <u>Household Pests</u>	6-00110
7. <u>Insects Exhibit</u>	6-00111
8. <u>Marine Life</u>	6-00087
9. <u>Mollusks Exhibit</u>	6-00002
10. <u>Poisonous Plants</u> Set 1	6-00105
11. <u>Poisonous Plants</u> Set 2	6-00106
12. <u>Poisonous Plants</u> Set 3	6-00170

## SPEAKERS

Write the agency well in advance to alleviate conflicts in scheduling or changes in visiting speaker programs. Speakers prefer to work with large groups.

1. Agricultural Research and Education Center  
18905 S. W. 280th Street  
Homestead, Florida 33030
2. County Agents Offices  
2690 N. W. 7th Avenue  
Miami, Florida 33127  
and  
18710 S. W. 288th Street  
Homestead, Florida 33030
3. National Marine Fisheries Service  
Southeast Fishery Service  
(Formerly Tropical Atlantic Biological Laboratories)  
75 Virginia Beach Drive  
Miami, Florida 33149
4. Tropical Audubon Society  
Speakers are available.  
Contact in the evening:  
Charles Lee 621-1673  
Harold Quincy 696-6908  
Flora O'Brien 443-5418
5. U. S. Geological Survey  
Water Resources Division  
51 S. W. 1st Avenue  
Room 730  
Miami, Florida 33130



## FIELD TRIPS

Write the agency well in advance to alleviate conflicts in scheduling or changes in the availability of guided tours.

THE COLLECTING OF ANY KIND OF MARINE ANIMALS  
BY NET, SEINE OR TRAP IS ILLEGAL WITHOUT A  
PERMIT. IN ORDER TO MAKE COLLECTIONS ON FIELD  
TRIPS (OR TO CATCH SPECIMENS FOR MARINE  
AQUARIUMS) TEACHERS SHOULD WRITE A LETTER  
REQUESTING A PERMIT TO:

FLORIDA STATE BOARD OF CONSERVATION  
LARSON BUILDING  
TALLAHASSEE, FLORIDA  
(ATTENTION PERMIT CLERK)

1. Agricultural Research and Education Center  
18905 S. W. 280th Street  
Homestead, Florida 33030
2. Agricultural Science Talks  
County Agent's Office  
18710 S. W. 288th Street  
Homestead, Florida 33030
3. City of Miami  
Park and Recreation Department  
Natural Science Tours  
Mr. Ralph Beaudry  
P. O. Box 708  
Coconut Grove Station  
Miami, Florida 33133
4. Everglades National Park  
Office of Interpretation  
Box 279  
Homestead, Florida 33030
5. Fairchild Tropical Garden  
Reference Library open to public  
Write for schedule of guided tours  
10901 Old Cutler Road  
Miami, Florida 33156
6. Metropolitan Dade County  
Parks and Recreation Department  
Natural Science Tours  
Miss Patti Amon  
50 S. W. 32nd Road  
Miami, Florida 33129



**FIELD TRIPS (Continued)**

7. Museum of Science  
3280 South Miami Avenue  
Miami, Florida 33129
8. National Marine Fisheries Service  
Southeast Fishery Service  
75 Virginia Beach Drive  
Miami, Florida 33149
9. Seaquarium  
30 Rickenbacker Causeway  
Miami, Florida 33149
10. Tropical Audubon Society  
Natural Science Tours  
Contact in the evening:  
Charles Lee 621-1673  
Harold Quincy 696-6908  
Flora O'Brien 443-5418
11. U. S. D. A. Crops Research  
Weed Investigations  
P. O. Box 9087  
Fort Lauderdale, Florida 33031

# MATERIALS TO PURCHASE

	Price	Publisher
<u>Audio Tape - Reel</u>		
1. <u>Conservation</u>	\$ 5.45	Educational Activities
<u>Books</u>		
2. <u>Allergy</u> - H.W. Bottomley	4.95	Funk and Wagnalls
3. <u>Animal Ecology</u> - Charles S. Elton	2.50	Barnes and Noble
4. <u>Biological Aspects of Water Pollution</u>	No Price Given	Charles C. Thomas
5. <u>Common Spiders of the U.S.</u> - James H. Emerton	2.00	Dover Publications
6. <u>Communities and Ecosystems</u> - Robert H. Whitakee	3.95	Macmillan
7. <u>Community, The</u> - Rene Konig Tr. by Edward Fitzgerald	6.50	Schocken Books
8. <u>Ecology: Habitats, Niches and Food Chains</u> - Janet Nickelsberg	4.50	J. B. Lippincott
9. <u>Ecology of Animals, The</u> -Charles S. Elton	3.00	Barnes and Noble
10. <u>Ecology of Invasions by Animals and Plants, The</u> - Charles S. Elton	5.00	Barnes and Noble
11. <u>Golden Nature Guides: Spiders and Their Kin</u> - Herbert Levi, Lorna Levi and Herbert Zim	4.95	Western Publishing
12. <u>How to Control Plant Diseases in Home &amp; Garden</u> - Malcom Shertleff	10.50	NASCO
13. <u>How to Know the Spiders</u> - B.J. Kaston	3.50	NASCO
14. <u>How to Know the Weeds</u> - Harry E. Jacques	3.75	NASCO
15. <u>How to Make an Insect Collection</u> - Staff of Ward's Natural Science Establishment	0.50	Ward's Natural Science
16. <u>Insects, The</u> - Peter Farb	6.60	Silver Burdett
17. <u>Living Community: A Venture into Ecology</u> - S. Carl Hirsch	3.75	Viking Press
18. <u>Parks and Gardens</u> - Robert S. Lemmon	5.95	J. C. Ferguson
19. <u>Plant Disease Handbook</u> -Cynthia Westcott	17.50	Van Nostrand Reinhold
20. <u>Plants that Feed the World</u> - Rose E. Frisch	3.95	Van Nostrand Reinhold
21. <u>Weed Control</u> - A.S. Crofts & W.S. Robins	2.00	Barnes and Noble
22. <u>Weed Control as a Science</u> -J.D. Klingman	8.95	NASCO
23. <u>Weed Identification and Control</u>	5.95	NASCO
24. <u>What is Allergy? A Guide for the Allergic Person</u> - Raymond T. Benack	6.75	Charles C. Thomas
25. <u>Whole Truth About Allergy, The</u> - Herman Hirschfield	3.50	ARCO Publishing
<u>Cards</u>		
26. <u>Food Plants</u>	0.20	CCM School Materials
27. <u>Orders of Insects</u>	0.20	CCM School Materials
28. <u>Poisonous Plants</u>	0.20	CCM School Materials



## MATERIALS TO PURCHASE (Continued)

### Charts

29. Basic Ecology Chart Set	\$ 108.00	Denoyer-Geppert
30. Chart of the Beneficial and Harmful Insects	17.50	Denoyer-Geppert
31. Food Plants of the New World	1.30	CCM School Materials
32. Marine Life of the Seashore	15.00	Bailey Film Association
33. Poisonous Plants	1.30	CCM School Materials

### Equipment

34. Micro-Biome Environmental Experimental Chamber	12.15	Ward's Natural Science
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### Film Loops - Super 8mm

35. Everglade Swamps	22.00	Denoyer-Geppert
36. How Spiders Capture Prey - With Webs	21.50	CENCO Educational Aids
37. How Spiders Capture Prey - Without Webs	21.50	CENCO Educational Aids
38. Plankton: Food Webs and Feeding Relationships	22.95	Ealing Film Loops
39. Plant Poisoning	17.50	Encyclopaedia Britannica
40. Safety Rules with Outdoor Plants	17.50	Encyclopaedia Britannica
41. Sand Bottom Environment	21.50	CENCO Educational Aids
42. Sandshore Environment	21.50	CENCO Educational Aids
43. Spiders Collecting of Prey	19.50	CENCO Educational Aids
44. Structure, Function, and Feeding Behavior in Herons	18.00	Houghton Mifflin

### Filmstrips

45. Animal and Plant Communities: Pond	6.75	McGraw-Hill
46. Changes in Ecosystems	8.50	McGraw-Hill
47. Collecting Spiders	6.00	Encyclopaedia Britannica
48. Ecological Succession	7.00	McGraw-Hill
49. Fresh Water Ecology	8.50	McGraw-Hill
50. Habitats and Niches	8.50	McGraw-Hill
51. Interdependence of Living Things	36.50	McGraw-Hill
52. Let's Explore a Lawn	6.00	Society for Visual Education
53. Living Things and Their Habitats	40.00	Ward's Natural Science
54. Nature's Balance	4.00	Visual Education
55. Plants and Their Habitats	6.00	MoIntyre
56. Spiders and Their Work	3.00	Long FilmSlide
57. Web of Life, The	6.75	McGraw-Hill

## MATERIALS TO PURCHASE (Continued)

### Filmstrips - Sound

58. <u>Common Pasture and Meadow Weeds and Their Control</u>	6.00	NASCO
59. <u>Ecology of a Pond</u>	9.00	Imperial Film
60. <u>Ecology of a Seashore</u>	9.00	Imperial Film
61. <u>Identification of Weeds - Part I</u>	3.15	NASCO
62. <u>Identification of Weeds - Part II</u>	2.60	NASCO
63. <u>Interactions and Environments</u>	----	Jam Handy
64. <u>Life in Two Subtropical Communities</u>	9.00	Society for Visual Education
65. <u>Life Within the Soil</u>	11.00	Eye Gate House

### Kits

66. Audubon Ecology Study Program	2.00	National Audubon Society
67. Plant Food Demonstration	4.35	NASCO
68. Sample Ecology-Conservation Kit	5.00	NASCO

### Materials - Printed

69. Audubon Nature Bulletins on Insects and Spiders	1.95	National Audubon Society
70. Poisonous Plants	0.07	National Safety Council

### Slides

71. <u>Animal Ecology</u>	28.60	CCM School Materials
72. <u>Common Insects and Spiders</u>	8.50	Society for Visual Education
73. <u>Common Weeds</u>	29.50	CCM School Materials
74. <u>Diseases of Vegetables</u>	8.00	NASCO
75. <u>Injurious Plants Set</u>	6.00	CENCO Educational Aids
76. <u>Major Plant Diseases</u>	50.00	NASCO
77. <u>Plant Ecology</u>	24.50	CCM School Materials
78. <u>Plant Relations with Environment</u>	11.25	CENCO Educational Aids
79. <u>Tropical Fruits</u>	24.50	CCM School Materials
80. <u>Weed Seeds</u>	12.75	NASCO

### Specimens

81. Fungus and Bacterial Diseases of Cultivated Plants	13.50	NASCO
82. Harmful Weeds	15.00	CCM School Materials
83. How Soils are Formed	4.50	NASCO
84. Insects Harmful to Man	9.85	NASCO
85. Plants Injurious to Man	13.75	CCM School Materials
86. Poisonous Plants	12.50	CENCO Educational Aids
87. Poisonous Plants	9.85	NASCO
88. Soil Formation Display	4.15	NASCO
89. Spider Set (Museum Mount)	6.65	CENCO Educational Aids
90. Spider Types	11.75	CCM School Materials



## MATERIALS TO PURCHASE (Continued)

### Transparencies

91. Feeding Chain Simple Diagram	1.50	United Transparency
92. Food Chain	4.75	GAF Reprographic
93. Food Chain, The	1.50	United Transparency
94. Food Pyramid	4.75	GAF Reprographic
95. Life at the Seashore	4.75	GAF Reprographic
96. Life in a Pond	5.85	GAF Reprographic
97. Plant Disease Set	94.55	MASCO
98. Typical Food Chain, A	6.60	CCM School Materials

### Workbook

99. Plant Ecology Workbook	5.00	Burgess Publishing
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## MASTER SHEET - LIFE SCIENCE THROUGH FIELD EXPERIENCES

Objectives	Relevant Publications Entire Publication	Media Units	Suggested Activities	Films	Transparencies	Records	Slides	Models	Speakers	Field Trips	Materials to Purchase
1	#2 pp. 24-41 #4 pp. 20, 25, 33-36, 46-98, 179-187 #9 a, 10 <sup>a</sup> #17 a, 21 <sup>a</sup>	1	1, 2	3, 4, 5, 10, 35, 41			10, 11	1, 2, 4, 8, 9	3, 4	4, 6, 7, 8, 9, 10	3, 9, 29, 32, 34, 41, 42, 51, 60, 71, 77, 78, 95, 99
2	#1 Ch. 30 #2 pp. 4-24, 28, 30, 31 #7 a, 9 <sup>a</sup> #14 pp. 311-312, #17 a #22 p. 124 #31 a	2	3	6, 9, 18, 32, 33, 39, 40, 45			1, 2, 14		4, 5	4, 7, 9	3, 4, 8, 9, 29, 34, 49, 51, 59, 63, 71, 77, 78, 91, 92, 93, 96, 98, 99
3	#1 Ch. 30 #2 p. 47 #7 a, 9 <sup>a</sup> #11 a, 12 <sup>a</sup> #14 p. 306 #17 a, 18 <sup>a</sup> #31 a	3	4	2, 9, 12, 13, 18, 27, 30, 31, 32, 33, 34, 36, 39, 40, 45	2		1, 2, 3, 5, 6, 14	3	4, 5	4, 7	3, 8, 9, 29, 34, 35, 38, 44, 50, 51, 55, 57, 71, 77, 78, 94, 99
4	#9 a, 15 <sup>a</sup> #16 a, 17 <sup>a</sup> #22 pp. 49-80 #24 a, 27 <sup>a</sup>	4	5	7, 8, 14, 15, 22, 23, 24, 25, 26, 29, 32, 37, 43, 44	1		9, 13	5, 6, 7	1, 4	1, 3, 4, 6, 10	5, 11, 13, 15, 16, 27, 29, 30, 36, 37, 43, 47, 51, 53, 56, 69, 72, 84, 89, 90
5	#9 a, 17 <sup>a</sup> #19 a, 24 <sup>a</sup> #26 a, 27 <sup>a</sup>	5	6	28	3		5, 6		1, 2, 4	1, 2	12, 19, 29, 51, 74, 76, 81, 87
6	#9 a, 12 <sup>a</sup> #17 a, 23 <sup>a</sup> #25 a, 27 <sup>a</sup> #29 a	6	7	21					4	11	14, 21, 22, 23, 29, 32, 58, 61, 62, 73, 80, 82
7	#3 a, 7 <sup>a</sup> #8 a, 9 <sup>a</sup> #12 a, 16 <sup>a</sup> #17 a, 27 <sup>a</sup> #28 a, 30 <sup>a</sup>	7	8	1			5, 6 10, 11, 12	10, 11, 12	2, 4	4, 5, 6, 7, 10	2, 24, 25, 28, 29, 33, 39, 40, 70, 75, 85, 86, 87
8	#3 a, 9 <sup>a</sup> #12 a, 13 <sup>a</sup> #17 a, 20 <sup>a</sup> #27 a	8	9	19, 20, 38			4, 5, 6, 7, 8, 12		1, 2, 4	1, 2, 5, 6, 7, 10	20, 26, 29, 31, 66, 67, 79
9	#1 Ch. 30 #2 pp. 11, 42-58 #7 a, 9 <sup>a</sup> , 11 <sup>a</sup> #12 a, 17 <sup>a</sup> #18 a #22 pp. 17-48 #31 a	9	10	11, 12, 16, 17, 18, 27, 32, 39, 40, 45, 46	2	1	1, 2, 3, 14		4	4, 7	3, 6, 7, 9, 17, 29, 34, 45, 64, 65, 71, 77, 78, 99
10	#1 Ch. 30 #9 a, 12 <sup>a</sup> #17 a, 18 <sup>a</sup> #22 pp. 17-48 #31 a	10	11	9, 39, 40, 42, 45			1, 2, 3, 14		4, 5	4	1, 3, 9, 10, 29, 34, 46, 48, 54, 68, 71, 77, 78, 83, 88, 89
11	#6 a, 9 <sup>a</sup> #12 a, 17 <sup>a</sup>	11	12	9					4	3, 4, 6, 10	1, 10, 18, 29, 34